



UNITED STATES PATENT AND TRADEMARK OFFICE

W
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,018	08/27/2003	Jiandong Jiang	TI-36100	5914
23494	7590	01/27/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			LAXTON, GARY L	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,018	JIANG, JIANDONG	
	Examiner	Art Unit	
	Gary L. Laxton	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1 is/are rejected.
- 7) Claim(s) 2-14 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 27 August 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. Claims 1-14 are objected to because of the following informalities:

Claim 1 recites the limitations "the pulse width" and "the PWM signal" in line 3. There is insufficient antecedent basis for these limitations in the claim. Claims 2-5 inherit the same from claim 1.

Claim 5 recites the limitation "the selectable digital delay" in line 3. There is insufficient antecedent basis for this limitation in the claim

Claim 6 recites the limitation "the pulse width" in line 3. There is insufficient antecedent basis for this limitation in the claim. Claims 7-10 inherit the same from claim 6.

Claim 11 recites the limitation "the PWM circuit" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the selected delayed OC detection signal" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the pulse width" in line 4. There is insufficient antecedent basis for this limitation in the claim. Claims 13 and 14 inherit the same from claim 12.

Claim 12 recites the limitation "the PWM system" in line 5. There is insufficient antecedent basis for this limitation in the claim. Claims 13 and 14 inherit the same from claim 12.

The claims have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Imazeki et al (US 4,330,816).

Imazeki et al disclose a PWM switching power output stage circuit, an over-current detection method comprising the steps of detecting the pulse width of the PWM signal (pulse generating circuit 11 which generates a pulse (PS) that resets a latch circuit in response to the trailing edge of the control pulse (Pct) produced by pulse width modulator (4)); detecting an over-current condition in the PWM circuit (overcurrent protection circuit: 7, 12 OCD);

Art Unit: 2838

adaptively filtering (note: “adaptively filtering” is given no patentable weight due its narrative form) a detected over-current condition relative to the pulse width (13); and generating an over-current detection output (col. 4 lines 60-67; col. 5 lines 1-35).

Allowable Subject Matter

5. Claims 2-5 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
6. Claims 6-14 would be allowable if rewritten or amended to overcome the objection(s) set forth in this Office action.
7. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2-5; prior art fails to disclose or suggest, inter alia, a PWM switching power circuit comprising

Claims 6-10; prior art fails to disclose or suggest, inter alia, an overcurrent detection method for application in a PWM switching power output circuit, comprising: detecting a pulse width of a PWM signal in the PWM circuit; selecting a digital delay less than the pulse width of the PWM signal; detecting an over-current condition in the PWM circuit and providing an over-current detection signal; filtering the over-current detection signal by means of the digital delay; and outputting an over-current detection result.

Claims 11-14; prior art fails to disclose or suggest, inter alia, an over-current detection method for PWM switching power stages, the over-current detection method comprising the steps of: providing a plurality of selectable digital delays, at least one selectable digital delay having a duration less than one half of a pre-selected minimum pulse width of the PWM circuit; detecting the pulse width of a PWM signal in the PWM circuit; selecting a digital delay less than the pulse width of the PWM signal; detecting an over-current condition in the PWM power stage and providing an over-current detection signal; filtering the over-current detection signal by means of logically determining whether the over-current detection signal and the selected delayed over current detection signal are both true; and outputting an over-current detection result for an over-current detection signal having a duration greater than the selected digital delay.

Claims 12-14; prior art fails to disclose or suggest, inter alia, an over-current detection circuit for use in a PWM switching power stage, the over-current detection circuit comprising: a plurality of selectable digital delay paths; a pulse width detection circuit for detecting the pulse width of a PWM signal in the PWM system; an over-current condition detector for detecting the presence of an over- current in the PWM system; a filter for outputting an over-current detection result for an over-current detection signal having a duration equal to or greater than the selected digital delay.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2838

US 6,418,002 Yang et al disclose a power supply supervisor to monitor a power supply to detect abnormal situations occurring.

US 4,839,770 Ruta discloses a control circuit with validity determining arrangement.

US 3,906,258 Moe discloses failure detecting and inhibiting circuit.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L. Laxton whose telephone number is (571) 272-2079. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2084. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 1/24/05
Gary L. Laxton
Patent Examiner
Art Unit 2838